# Preliminary Report: Multistate Outbreak of Monkeypox in Persons Exposed to Pet Prairie Dogs

An extensive multidisciplinary investigation in Wisconsin, Illinois, and Indiana has identified cases of febrile rash illness in persons who had direct or close contact with recently purchased ill prairie dogs. Scientists at the Marshfield Clinic in Marshfield, Wisconsin, recovered viral isolates from a patient and a prairie dog and demonstrated a virus morphologically consistent with a poxvirus by electron microscopy (see http://research.marshfieldclinic.org/crc/prairiedog.asp for electron microscopy images).

Preliminary results of serologic testing, polymerase-chain-reaction analysis, and gene sequencing performed at the Centers for Disease Control and Prevention (CDC) on June 6-7 indicated that the causative agent is monkeypox virus, a member of the orthopoxvirus group of viruses. Results of additional evaluation at CDC by electron microscopy and immunohistochemical studies are consistent with the finding of an orthopoxvirus. These findings represent the first evidence of community-acquired monkeypox-like infection in the United States. Further characterization of the virus is in progress.

Human monkeypox is a rare zoonotic viral disease that occurs primarily in the rain forest countries of central and west Africa. In humans, the illness produces a vesicular and pustular rash similar to that of smallpox. Limited person-to-person spread of infection has been reported in disease-endemic areas in Africa; the incubation period is about 12 days. Case-fatality ratios in Africa have ranged from 1% to 10% (for additional information about monkeypox, see www.cdc.gov/ncidod/eid/vol7no3/hutin.htm).

As of June 7, cases of suspected monkeypox had been reported among residents of Wisconsin (17), northern Illinois (1), and northwestern Indiana (1). Onset of illness among patients began in early May. Patients typically experienced a prodrome consisting of fever, headaches, myalgias, chills, and drenching sweats. Roughly one-third of patients had nonproductive cough. This prodromal phase was followed 1-10 days later by the development of a papular rash that typically progressed through stages of vesiculation, pustulation, umbilication, and crusting. In some patients, early lesions have become ulcerated. Rash distribution and lesions have occurred on head, trunk, and extremities; many of the patients had initial and satellite lesions on palms and soles and extremities. Rashes were generalized in some patients. After onset of the rash, patients have generally manifested rash lesions in different stages. All patients reported direct or close contact with prairie dogs, most of which were sick. Illness in prairie dogs was frequently reported as beginning with a blepharoconjunctivitis, progressing to presence of nodular lesions in some cases. Some prairie dogs have died from the illness, while others reportedly recovered.

In May, the prairie dogs were sold by a Milwaukee animal distributor to two pet shops in the Milwaukee area and during a pet "swap meet" (pets for sale or exchange) in northern Wisconsin. The Milwaukee animal distributor had obtained prairie dogs and a Gambian giant rat that was ill at the time from a northern Illinois animal distributor. It is unclear whether other retail outlets are involved. Investigations are under way to trace back the source of the prairie dogs and the Gambian giant rat and determine if distributors in other states might be involved. Animal species susceptible to monkeypox virus may include non-human primates, lagomorphs (rabbits), and some rodents.

On the basis of preliminary findings from this investigation, it appears that the primary route of transmission may be from infected prairie dogs to humans as a result of close contact. However, the possibility of human-to-human transmission cannot be excluded at this time. As a precaution until additional information is available, the measures below should be followed.



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(continued from previous page)

## General Prevention

- Avoid contact with any prairie dogs or Gambian giant rats that appear to be ill (e.g., are missing patches of fur, have a visible rash on the skin, or have a discharge from eyes or nose).
- Wash hands thoroughly after any contact with prairie dogs, Gambian giant rats, or any ill animal.

## Diagnosis

- Physicians should consider monkeypox in persons with fever, cough, headache, myalgias, rash, or lymph node enlargement within 3 weeks after contact with prairie dogs or Gambian giant rats. Inform the treating physician or other clinician of the animal exposure.
- Veterinarians examining sick exotic animal species, especially prairie dogs and Gambian giant rats, should consider monkeypox. Veterinarians should also be alert to the development of illness in other animal species that may have been housed with ill prairie dogs or Gambian giant rats.

## Treatment

No specific treatment recommendations are being made at this time. Smallpox vaccine has been reported to reduce the risk of monkeypox among previously vaccinated persons in Africa. CDC is assessing the potential role of postexposure use of smallpox vaccine as well as therapeutic use of the antiviral drug cidofovir.

## Reporting

Health care providers, veterinarians, and public health personnel should report cases of these illnesses in humans and animals to their state or local health departments as soon as they are suspected.

## Submission of Specimens from Patients with Suspected Monkeypox

Procedures recommended for collection of samples for diagnosis of potential monkeypox disease are essentially the same as those for diagnosis of the related orthopoxvirus diseases, vaccinia and smallpox. For information regarding collection of serum specimens and lesions, please refer to the smallpox laboratory testing guidelines at www.bt.cdc.gov/agent/smallpox/lab-testing. Consultation with the state epidemiologist (www.cste.org/members/state_and_territorial_epi.asp) and state health laboratory (www.aphl.org/public_health_labs/index.cfm) is necessary for submission instructions before sending specimens to CDC.

## Additional Information

For more information contact your state or local health department. Additional information and recommendations will be released as they become available. Updated information will be posted on CDC's Web site.

For more information, visit www.cdc.gov/ncidod/monkeypox or call the CDC public response hotline at (888) 246-2675 (English), (888) 246-2857 (Español), or (866) 874-2646 (TTY)



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